



PATENTS  
NVX-002 CON4

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Timothy V. Updyke et al.  
Serial No. : 09/728,378 Confirmation No.: 3471  
Filed : November 28, 2000  
For : SYSTEM FOR PH-NEUTRAL STABLE  
ELECTROPHORESIS GEL  
Group Art Unit : 1743  
Examiner : Alexander S. Noguerola

Hon. Commissioner for Patents  
c/o P.O. Box 2327  
Arlington, VA 22202

INFORMATION DISCLOSURE STATEMENT

Sir:

Pursuant to 37 C.F.R. §§ 1.56, 1.97 and 1.98,  
applicants hereby make the following documents of record\* in the  
above identified application:

U.S. Patents

Hayes, Jr. et al.	3,870,812	03/1975
Monthony et al.	3,948,743	04/1976
Chrambach et al.	4,139,440	02/1979
Bluestein et al.	4,209,373	06/1980
de Castro et al.	4,481,094	11/1984

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\* Applicants reserve the right to challenge any of  
the cited references as prior art.

Nochumson	4,504,641	03/1985
Nochumson	4,542,200	09/1985
Ogawa et al.	4,699,705	10/1987
Hochstrasser	4,950,708	08/1990
Akins et al.	5,275,708	01/1994
*Chang et al.	5,334,708	08/1994
Guttman et al.	5,370,777	12/1994
Takeda et al.	5,464,516	11/1995
Engelhorn et al.	5,578,180	11/1996

#### Foreign Patent Documents

0 087 995 A1	EP	02/1983
0 087 995 B1	EP	02/1983
0 518 475 A1	EP	12/1992
0 566 784 A1	EP	10/1993
94/23092	WO	10/1994

#### Other Publications

Samuel Raymond, et al., "Acrylamide Gel as a Supporting Medium for Zone Electrophoresis," Science, Vol. 130, pp. 711-712, (1959).

Andrew C. Peacock, et al., "Molecular Weight Estimation and Separation of Ribonucleic Acid by Electrophoresis in Agarose-Acrylamide Composite Gels," Biochemistry, Vol. 7, No. 2, pp. 668-674, (1968).

\* A. Chrambach, et al., "Experimental Validation of the Predicted Properties of a Multiphasic Buffer System Applied to Polyacrylamide Gel Electrophoresis", Separ. Sci., 7(6), 725-745, (1972).

Thomas M. Jovin, "Multiphasic Zone Electrophoresis. I, II & III Steady-State Moving-Boundary Systems Formed by Different Electrolyte Combinations," Biochemistry, Vol. 12, No. 5, pp. 871-898, (1973).

Thomas M. Jovin, "Multiphasic Zone Electrophoresis. IV. Design and Analysis of Discontinuous Buffer Systems with a Digital Computer," Annals New York Academy of Science, Jovin: Computer Design of Buffer Systems, pp. 477-496, (1973).

CAPLUS abstract of Hoermann et al. ("Dissociation of fibrinogen and fibrin peptide chains by partial cleavages of disulfide bonds", Hoppe-Seyler's Z. Physiol. Chem. 1973, 354(90), 1103-1111), Month Unknown.

R. Ruechel et al., Hoppe-Seyler's Z. Physiol. Chem., 356(8), 1283-1288, (abstract), (1975).

Leslie C. Lane, "A Simple Method for Stabilizing Protein-Sulfhydryl Groups during SDS-Gel Electrophoresis," Analytical Biochemistry, Vol. 86, pp. 655-664, (1978).

Andreas Chrambach, et al., "Selected buffer systems for moving boundary electrophoresis on gels at various pH values, presented in a simplified manner," Electrophoresis, Vol. 4, pp. 190-204, (1983).

Michael W. Hunkapiller, et al., "Isolation of Microgram Quantities of Proteins from Polyacrylamide Gels for Amino Acid Sequence Analysis," Methods in Enzymology, Vol. 91, pp. 227-232, (1983).

Jack Kyte, et al., "A Discontinuous Electrophoretic System for Separating Peptides on Polyacrylamide Gels," Academic Press, Inc., pp. 515-522, (1983).

Anthony T. Andrews, "Electrophoresis, Theory, Techniques, and Biochemical and Clinical Applications," Oxford Science Publications, Second Edition, pp. 79-92, (1986).

A.T. Andrews, Electrophoresis, Oxford Univ. Press, pp. 20 & 126, (1986).

Malcolm Moos, Jr., et al., "Reproducible High Yield Sequencing of Proteins Electrophoretically Separated and Transferred to an Inert Support," The Journal of Biological Chemistry, Vol. 263, No. 13, pp. 6005-6008, (1988).

Kenneth G. Christy, Jr., et al., "Modifications for SDS-PAGE of Proteins," BioTechniques, Vol. 7, No. 7, pp. 692-693, (1989).

Jeffery D. Fritz, et al., "Factors Affecting Polyacrylamide Gel Electrophoresis and Electrophoretic Transfer of High-Molecular-Weight Myofibrillar Proteins," Analytical Biochemistry, Vol. 180, pp. 205-210, (1989).

K. Nakamura et al., Electrophoresis, pp. 10, 29-33, (1989).

B.D. Hames, et al., "Gel Electrophoresis of Proteins, A Practical Approach," The IRL Press at Oxford University Press, Second Edition, pp. 1-50, (1990).

Jens Wiltfang, et al., "A new multiphasic buffer system for sodium dodecyl sulfate-polyacrylamide gel electrophoresis of proteins and peptides with molecular masses 100 000-1000, and their detection with picomolar sensitivity," Electrophoresis, Vol. 12, pp. 352-366, (1991).

"Migration Tables" and "Buffer Selection Guide", NOVEX Brochure, (1991).

Wayne F. Patton, et al., "Tris-Tricine and Tris-Borate Buffer Systems Provide Better Estimates of Human Mesothelial Cell Intermediate Filament Protein Molecular Weights than the Standard Tris-Glycine System," Analytical Biochemistry, Vol. 197, pp. 25-33 (Aug. 15, 1991).

"Electrophoresis, The NOVEX System: The Fast, Easy Way To Your Answer!", NOVEX Brochure (1992).

Martin de Llano, et al., "Increased electrophoretic mobility of sodium sulfite-treated jack bean urease," Electrophoresis, Vol. 13, pp. 300-304, (1992).

Harold Swerdlow, et al., "Stability of capillary gels for automated sequencing of DNA," Electrophoresis, Vol. 13, pp. 475-483, (1992).

"Technically Speaking...", NOVEX Pre-mixed Buffers, Fast, Easy, Reproducible Electrophoresis Buffers," NOVEX Brochure (1993).

Suraj P. Bhat, "DNA Sequencing on Minigels: An Alternative Technique for routine Analysis," Academic Press, Inc., pp. 560-562, (1993).

Harold Swerdlow, et al., "Reloading and Stability of Polyacrylamide Slab Gels for Automated DNA Sequencing," BioTechniques, Vol. 16, No. 4, pp. 684-693, (1994).

Piero Carninci, et al., "A discontinuous buffer system increasing resolution and reproducibility in DNA sequencing on high voltage

horizontal ultrathin-layer electrophoresis," Electrophoresis, Vol. 16, pp. 1836-1845, (1995).

Robert C. Allen, et al., "Discontinuous electrophoresis revisited: A review of the process," Applied and Theoretical Electrophoresis, Vol. 6, pp. 1-9, (1996).

"The Protein Society," Protein Science Program & Abstracts, Vol. 5, Suppl. 1 (1996).

David Lide, editor, CRC Handbook of Chemistry & Physics, 77th edition, p. 7-12, (1996-97).

#### Other Information

From about June 1992 to about September 1992, Novel Experimental Technology, Inc. ("NOVEX"), Assignee of the above-identified patent application, sold a gel electrophoresis product called the "Nu PAGE Precast RNA Gel Kit" (the "NU PAGE Product"). The NU PAGE Product was a continuous buffer polyacrylamide gel electrophoresis system that included a neutral pH gel buffer. The gel buffer comprised an organic amine with a pKa near neutrality (hydroxy-ethyl-morpholine, pKa of about 7), titrated with acetic acid to pH 7.0.

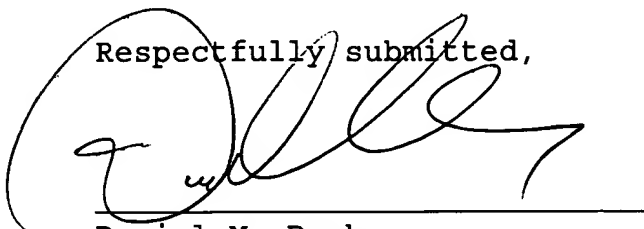
Copies of the documents marked with an asterisk are enclosed herewith. The remaining documents were cited in or submitted with applications to which priority is claimed under 35 U.S.C. § 120; accordingly, copies of these latter documents are not submitted herewith pursuant to 37 C.F.R. § 1.98(d). All documents are listed on the accompanying Form PTO-1449 (submitted in duplicate).

Applicants respectfully request that these documents be (1) fully considered by the Patent and Trademark Office during

the examination of this application; and (2) printed on any patent that may issue on this application. Applicants request that a copy of Form PTO-1449, as considered and initialed by the Examiner, be returned with the next communication.

Applicants further respectfully request an early and favorable action.

Respectfully submitted,



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